

CLAIMS

What is claimed is:

- 1 1. A dynamic random access memory device comprising:
2 a storage trench;
3 a storage conductor within said storage trench;
4 a lip strap connected to said storage conductor; and
5 a control device electrically connected to said storage conductor through
6 said lip strap.

1 2. The device in claim 1, wherein said trench has a corner adjacent said
2 control device and said lip strap comprises a conductor surrounding said corner.

1 3. The device in claim 1, wherein said control device includes a control
2 device conductive region adjacent said trench and said lip strap comprises a
3 conductor extending along a side of said trench and along a portion of said control
4 device conductive region.

1 4. The device in claim 1, further comprising a collar insulator along a top
2 portion of said trench, wherein said lip strap comprises a conductor extending
3 from a top of said collar to a top of said trench, said lip strap further extending

4 along a surface of said device adjacent said trench and perpendicular to said
5 trench.

1 5. The device in claim 4, further comprising a node dielectric lining said
2 trench, wherein said lip strap surrounds an upper portion of said node dielectric
3 adjacent said top portion of said trench.

1 6. The device in claim 1, further comprising a trench top oxide, wherein said
2 lip strap extends into said trench top oxide and forms an inverted U-shaped
3 structure.

1 7. The device in claim 1, wherein said lip strap comprises a conductor
2 extending along two perpendicular portions of a top corner of said trench.

1 8. A method of forming a dynamic random access memory structure, said
2 method comprising:

3 forming a trench within a substrate;

4 filling said trench with a trench conductor;

5 forming a pad oxide along a surface of said substrate adjacent said trench;

6 forming a collar along an upper portion of said trench such that said collar
7 insulates said substrate from said trench conductor;

8 recessing said collar and said pad oxide;

9 depositing a lip strap over said trench conductor and in recesses produced
10 by said recessing; and
11 forming an isolation region adjacent said lip strap.

1 9. The method in claim 8, further comprising forming a control device
2 adjacent said trench, wherein said trench has a corner adjacent said control device
3 and said lip strap comprises a conductor surrounding said corner.

1 10. The method in claim 8, wherein said forming of said control device
2 includes forming a control device conductive region adjacent said trench and said
3 lip strap comprises a conductor formed along a side of said trench and along a
4 portion of said control device conductive region.

1 11. The method in claim 8, further comprising forming a collar insulator along
2 a top portion of said trench, wherein said lip strap comprises a conductor formed
3 to extend from a top of said collar to a top of said trench, said lip strap further
4 extending along a surface of said device adjacent said trench and perpendicular to
5 said trench.

1 12. The method in claim 11, further comprising lining said trench with a node
2 dielectric, wherein said lip strap surrounds an upper portion of said node dielectric
3 adjacent said top portion of said trench.

1 13. The method in claim 8, further comprising forming a trench top oxide,
2 such that said lip strap extends into said trench top oxide and forms an inverted U-
3 shaped structure.

1 14. The method in claim 8, wherein said lip strap comprises a conductor
2 formed along two perpendicular portions of a top corner of said trench.

1 15. A method of forming a dynamic random access memory structure, said
2 method comprising:

3 forming a trench within a substrate;
4 filling said trench with a trench conductor;
5 forming a pad oxide along a surface of said substrate adjacent said trench;
6 forming a collar along an upper portion of said trench such that said
7 collar insulates said substrate from said trench conductor;
8 forming an isolation region adjacent said trench conductor;
9 recessing said collar and said pad oxide; and
10 depositing a lip strap over said trench conductor and in recesses produced
11 by said recessing.

1 16. The method in claim 15, further comprising forming a control device
2 adjacent said trench, wherein said trench has a corner adjacent said control device
3 and said lip strap comprises a conductor surrounding said corner.

1 17. The method in claim 15, wherein said forming of said control device
2 includes forming a control device conductive region adjacent said trench and said
3 lip strap comprises a conductor formed along a side of said trench and along a
4 portion of said control device conductive region.

1 18. The method in claim 15, further comprising forming a collar insulator
2 along a top portion of said trench, wherein said lip strap comprises a conductor
3 formed to extend from a top of said collar to a top of said trench, said lip strap
4 further extending along a surface of said device adjacent said trench and
5 perpendicular to said trench.

1 19. The method in claim 11, further comprising lining said trench with a node
2 dielectric, wherein said lip strap surrounds an upper portion of said node dielectric
3 adjacent said top portion of said trench.

1 20. The method in claim 15, further comprising forming a trench top oxide,
2 such that said lip strap extends into said trench top oxide and forms an inverted U-
3 shaped structure.